

APPLICANT(S): TRIBELSKY, Zamir  
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#### **REMARKS**

The present response is intended to be fully responsive to all points of objection and/or rejection raised by the Examiner and is believed to place the application in condition for allowance. Favorable reconsideration and allowance of the application is respectfully requested.

Applicant asserts that the present invention is new, non-obvious and useful. Prompt consideration and allowance of the claims is respectfully requested.

#### **Status of Claims**

Claims 1, 4 and 16-18 remain pending in the application. Claims 1, 4 and 16-18 have been rejected. Claims 1 and 16 were amended. Applicant respectfully asserts that the amendments do not add any new matter.

#### **CLAIM OBJECTIONS**

Claims 1, 4 and 16-18 were objected to for a misspelling in claim 1. Claim 1 was amended, thus overcoming the objection. Accordingly the Applicants request that the objection be withdrawn.

#### **CLAIM REJECTIONS**

##### **35 U.S.C. § 112 Rejections**

Claim 16 was rejected under 35 U.S.C. § 112, second paragraph, as allegedly lacking antecedent basis for the term "the surrounding". Claim 16 was amended by replacing "the surrounding" with "a medium surrounding said liquid".

Accordingly, the rejection under 35 U.S.C. § 112 should be withdrawn.

##### **35 U.S.C. § 102 Rejections**

Claims 1, 4 and 17-18 were rejected under 35 U.S.C. § 102(e) as being anticipated by Baca (US 2002-0079271)

Applicant respectfully asserts that Baca does not teach all elements of claim 1 and therefore cannot anticipate claim 1.

Baca is directed to water treatment using laser light where water flowing in water tubing enters a treatment area that is subjected to Ultraviolet light where the configuration of the system does not enable total internal reflection.

Figs. 2 and 3 of Baca illustrating two configurations of a dental hand piece are reproduced below.

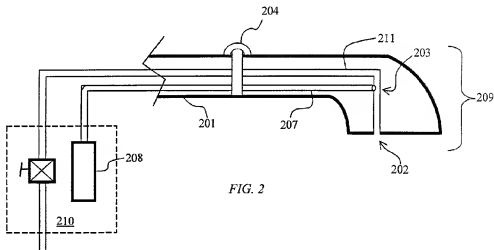


FIG. 2

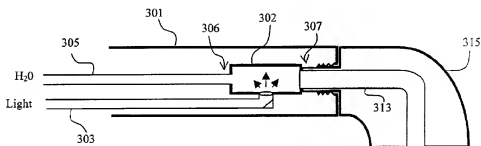


FIG. 3

The configurations of Figs. 2 and 3 do not enable total internal reflection. As known in the art, the phenomenon of total internal reflection can occur only when a light ray travels in a medium of a given refractive index bounded by a medium of a lower refractive index above the critical angle. The critical angle for total internal reflection is given by  $\arcsin(n_2/n_1)$  where  $n_2$  is the lower refractive index of the less dense medium, i.e. air, and  $n_1$  is the refractive index of the denser medium, i.e. glass. Total internal

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reflection will not occur when a light ray propagates from air to a transparent material having a higher refractive index but may occur when a light ray propagates from a transparent matter toward air if the light ray strikes the medium boundary and only if it strikes the boundary at an angle above the critical angle.

Applicant respectfully asserts that the devices disclosed by Baca do not enable total internal reflection. Accordingly, Applicants respectfully assert that Baca does not teach all the elements of claim 1 and that claim 1 and claims 4 and 17-18 dependent there on are patentable and thus allowable over Baca.

Therefore, Applicant respectfully requests that the Examiner withdraw the rejection of claims 1, 4 and 16-18 under 35 U.S.C. § 102(e).

### **35 U.S.C. § 103 Rejections**

Claims 1, 4 and 16-18 were rejected under 35 U.S.C. § 103(a), as being unpatentable over Baca in view of Neuberger (US 5658148) or Schneider (US 3,503,804).

Applicant respectfully traverses the rejections in view of the remarks that follow.

As discussed above Baca does not teach or suggest disinfecting a stream of liquid using total internal reflection. Schneider discloses an apparatus for mechanically removing dirt particles from surfaces by producing sonic or ultrasonic waves on a surface with a jet of water (clear water) and any radiation in the range between infrared and ultraviolet. Neuberger discloses an oral cleaning device for destroying bacteria and viruses in the mouth and not for disinfecting liquid by ultraviolet. Neuberger discloses the use of a diode laser at a wave length of 904 nm (col. 1, line 26), 670 nm, 780 nm or 820 nm (col. 1, lines 49-52), none of which are within the Ultraviolet range.

The mere fact that a reference discloses the well-known phenomenon of a liquid wave-guide or total internal reflection does not suggest disinfecting a stream of liquid using total internal reflection. As discussed above, total internal reflection occurs only under certain conditions, such as such as specific angular orientation of the UV radiation relative to the liquid stream. Applicants respectfully assert that it would not be obvious to modify the teaching of the Baca reference, which does not teach or suggest any use of total internal reflection with either the teaching Neuberger or Schneider and to come up with a new method for ultraviolet (UV) liquid disinfection that includes "disinfecting the stream of liquid by directing, within said stream of liquid, said UV-radiation at an angular orientation that enables the liquid to be disinfected to serve as a flowing

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liquid wave guide for the UV-radiation using total internal reflection" as recited by claim 1.

Applicant further asserts that independent claim 1 is allowable over the combination of Baca and Schneider as well as over the combination of Baca and Neuburger.

Each of dependent claims 4 and 16-18 depends, directly or indirectly, independent claim 1, and includes all the features of the claim from which it depends as well as additional distinguishing features, and is therefore allowable.

Therefore, Applicant respectfully requests that the Examiner withdraw the rejection of claims 1, 4 and 16-18 under 35 U.S.C. § 103(a).

### CONCLUSION

In view of the foregoing amendments and remarks, Applicant asserts that the pending claims are allowable. Their favorable reconsideration and allowance is respectfully requested.

Should the Examiner have any question or comment as to the form, content or entry of this Amendment, the Examiner is requested to contact the undersigned at the telephone number below. Similarly, if there are any further issues yet to be resolved to advance the prosecution of this application to issue, the Examiner is requested to telephone the undersigned counsel.

Please charge any fees associated with this paper to deposit account No. 50-3355.

Respectfully submitted,



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